DRAFT - ENHANCEMENT AREA ASSESSMENTS & STRATEGIES

Cumulative and Secondary Impacts: Assessment

Section 309 Programmatic Objectives

I. Develop, revise or enhance procedures or policies to provide cumulative and secondary impact controls.

Resource Characterization

1. Identify areas in the coastal zone where rapid growth or changes in land use require improved management of cumulative and secondary impacts (CSI). Provide the following information for each area:

- **Type of growth or change in land use (e.g., residential, industrial, etc.)**
- **Rate of growth or change in land use**
- **Types of cumulative and secondary impacts**

According to U.S. Census Bureau estimates, Virginia's population increased 5% from 2000-2005. Over that time, coastal zone cities and counties absorbed 65% of the state's overall population growth. In each of the past five years, the population of the coastal zone steadily represented 63% of the state's total population, while only covering 29% of Virginia's land area. Continued growth is forecast by a NOAA report, *Population Trends Along the Coastal United States: 1980-2008.* According to NOAA, Fairfax County is expected to have the greatest population increase of coastal counties in the Northeast for the five-year period 2003-2008.

As reported in the previous Assessment, Virginia's coastal zone is experiencing continued suburban growth around the three major population centers of Washington, DC/Northern Virginia, Richmond and Hampton Roads. In the past five years (2000-2004), rapid growth continued in many jurisdictions reported in the previous Assessment, most notably Stafford County with the highest rate of growth at 23%, Spotsylvania County (22%), Prince William County (19%), and the City of Suffolk (19%). The coastal zone counties of New Kent, James City, King George, Hanover and Isle of Wight also experienced double-digit growth rates. With the exception of Loudoun County in northern Virginia, the five fastest-growing jurisdictions in Virginia are all within the coastal zone. Slight population declines were estimated in only six of the 46 coastal zone jurisdictions: the Cities of Alexandria (-1%), Portsmouth (-1%), Petersburg (-2%), Arlington (-2%) and Richmond (-3%). The highest rate of decline was estimated in Williamsburg City at -4%.

With much of its population growth focused in formerly rural coastal zone counties, Virginia is experiencing the effects of sprawling residential development. NOAA reports that from 1999-2003, 142,000 single-family and 40,000 multi-family residential building permits were issued in Virginia's coastal zone. This growth represents 66% of the state's building permits issued for single-family and 43% for multi-family residential buildings.

In addition to sprawling suburban growth, Virginia continues to experience waterfront development that directly impacts its 5,000 miles of tidal shoreline. According to the Chesapeake Bay Program, the Bay watershed has the highest land to water ratio of any estuary in

the world, making its waters particularly susceptible to the cumulative and secondary impacts of shoreline development. Waterfront property in some parts of the coastal zone has appreciated an average of 400% over six years.[1] Demand for private residential and commercial property on Virginia's shorelines also reduces public access. *(Please see Public Access section for more details on privatization.)*

Land use change in the coastal zone is of concern especially where wastewater infrastructure is not present. As the fastest-growing coastal jurisdictions are rural and lack central wastewater infrastructure, growth management has historically been achieved through a parcel's capacity for onsite treatment. In 2000, the Virginia Department of Health's Onsite Sewage Disposal Standards (OSDS) were changed to allow engineered septic systems that do not rely on the soil as a treatment medium. This change has removed a limiting factor in the local government's ability to anticipate, plan for and manage growth, opening previously undevelopable coastal land to development. From 2000-2005, jurisdictions within the Middle Peninsula Planning District have seen the installation or permitting of permitted 1,200 new engineered septic systems. This change also impacts wetlands, as OSDS are exempt from the Non-Tidal Wetlands Act.

Growth and land use change in the coastal zone is characterized by conversion of forest and agricultural lands. In 2001, DEQ reported that Virginia ranked eleventh in the nation for the rate of land conversion, with approximately 68,700 acres per year changed from farming and forest to residential and commercial uses. This conversion of farmland and forest represents a reduction and fragmentation of wildlife habitat.

Three sensitive areas identified in the coastal zone with a combination of sensitive resources and growth pressures are the Seaside, the Southern Watersheds, and Dragon Run. These areas are in need of continued management to mitigate damage to sensitive coastal resources from CSIs. (*For more reading on sensitive areas, see the section on Special Area Management Planning*).

2. Identify areas in the coastal zone, by type or location, which possess sensitive coastal resources (e.g., wetlands, water bodies, fish and wildlife habitats, threatened and endangered species and their critical habitats) and require a greater degree of protection from the cumulative or secondary impacts of growth and development.

Area	**CSI Threats/Sensitive Coastal Resources**
1. Aquatic Resources (e.g. SAV beds, oyster reefs, fishery management areas)	Water quality impacts from point and nonpoint sources; direct impacts from structure impacts (breakwaters, docks, piers etc.); direct impacts from dredging
2. Riparian zone (e.g. tidal wetlands, riparian buffers, dunes, natural shorelines, native shoreline vegetation)	Direct impacts to the resources from development; privatization of the shoreline impacts public access
3. Upland Areas (e.g. forests, nontidal wetlands)	Loss of vegetative cover; habitat fragmentation from development

[1] Data estimated from initial data from 2005 Northumberland and Westmoreland County real estate assessment.

Identifying and Mapping Critical Resources
Since the last Assessment, state agencies have undertaken various initiatives to identify critical resources and make coastal resource data and mapping functions available to citizens, agencies, businesses, and local governments. Many of these initiatives have been funded by the Virginia Coastal Program with Section 309 funding under the Integration Strategy. The gaps identified in the last Assessment are significantly addressed by the ongoing development of these inventories. They have tremendous potential as tools for enhanced management of shoreline land use and coastal resources, as well as environmental review.

Green Infrastructure / Virginia Conservation Lands Needs Assessment (VCLNA)
The Virginia Department of Conservation and Recreation (DCR), with funding assistance from the Virginia Coastal Program and from the Virginia Land Conservation Foundation, completed a pilot Natural Landscape Assessment (NLA) for Virginia's Coastal Resources Management Area. The NLA is a landscape-scale GIS analysis of unfragmented natural habitats (cores) prioritized by ecological values, notably their value as habitat for interior-dependent species sensitive to fragmentation. A large-scale Natural Landscape Assessment tool for all of Virginia (VANLA) is also under development as part of the larger VCNLA. The NLA serves as a base layer for Green Infrastructure mapping, and is a flexible tool that can identify Green Infrastructure according to the needs and strategies of different conservation interests.

In this ongoing project, with the guidance of a Green Infrastructure Advisory Workgroup composed of key Coastal Partners, DCR will undertake use of the VCLNA to map a consensus Green Infrastructure for the Coastal Zone. The VANLA and the Coastal Zone Green Infrastructure are a large part of the Virginia Coastal Zone Management Program's Blue-Green Mapping Project and Policy Integration Strategy developed during the last 309 Planning Cycle to better link local land use ordinances to state water use policy.

INteractive STream Assesment Resource (INSTAR):
INSTAR is an interactive online tool developed by Virginia Commonwealth University's Center for Environmental Studies. INSTAR provides access to an extensive dataset for stream reaches throughout Virginia's coastal zone, including instream habitat and stream geomorphology. INSTAR has the capability to model streams in the coastal zone and assign 'stream health' values. http://instar.vcu.edu/about.htm

Virginia Forest Resource Information Mapper (ForestRIM)
An online interactive mapping tool developed by the Virginia Department of Forestry (DOF) provides access to over 100 maps, including forest resource information, aerial photos and topographic maps. http://www.forestrim.org/

Comprehensive Coastal Inventory
The Comprehensive Coastal Inventory (CCI) Program of the Virginia Institute for Marine Science (VIMS) monitors tidal shoreline conditions in order to develop policy and management recommendations for Virginia.

Tools developed by the CCI since the last assessment include:

- *Shoreline Situation Reports:* Detailed shoreline condition inventories for 11 coastal localities.

- *Blue Infrastructure (BI)*: Online interactive mapping tool that provides spatial information for Virginia's aquatic resources. The ecologically and economically significant aquatic resources (marine and freshwater) within the coastal zone, including oyster reefs, blue crab sanctuaries and aquaculture sites were mapped to help coastal land use planners better understand the potential impacts of proposed shoreline development on these resources.
- *Marina Suitability Tool:* This tool ranks suitability for marina siting based on three major categories: habitat, water quality, and design. Three possible levels of suitability can be assigned for a site: high (desirable), moderate (desirable with limitations), low (undesirable).
- *Wetlands Mitigation Targeting Tool:* This tool was created to identify sites suitable for the creation of wetlands as a mitigation measure.
- *Wetlands Data Viewer:* This tool allows users to obtain National Wetland Inventory (NWI) statistics for any hydrologic unit in Virginia.
- *Waterfront Development Tool:* This tool assists land managers by evaluating conditions on the landscape based on three major categories: existing land use, impacts to sensitive habitat, and potential impacts to water quality. The GIS-based model ranks criteria based on a designated set of rules and conditions.

Management Characterization

1. Identify significant changes in the state's ability to address CSI since the last assessment (e.g., new regulations, guidance, manuals, etc.). Provide the following information for each change:

- **Characterize the scope of the change**
- **Describe recent trends**
- **Identify impediments to addressing the change**
- **Identify successes in improved management**

Regulations

Revised Regulations and Guidance for Local Governments

In December 2001, the Chesapeake Bay Local Assistance Board (CBLAB) amended the Chesapeake Bay Preservation Area Designation and Management Regulations to reduce CSIs and better protect the Bay's water quality and habitat. Local governments incorporated these revised regulations by December 31, 2003. To assist localities in following the revised regulations, the CBLAB approved official guidance documents on the following topics in 2002 and 2003:

- Exceptions
- Nonconforming structures and uses
- Silvicultural operations (revised 6/16/03)
- RPA: Onsite buffer area delineation
- RPA: Buffer area encroachments

- Stormwater management requirements
- Agriculture: Soil and Water Quality Conservation Assessments
- Determinations of Water Bodies with Perennial Flow
- Administrative Procedures for the Designation and Refinement Of Chesapeake Bay Preservation Area Boundaries
- Resource Protection Areas: Permitted Development Activities

Stormwater Management

The 2004 General Assembly voted to transfer National Pollutant Discharge Elimination System (NPDES) permitting authority for combined municipal sewer systems and construction activities from the Virginia Department of Environmental Quality (DEQ) to the Virginia Department of Conservation and Recreation (DCR). As of January 2005, DCR is responsible for NPDES permits for the control of stormwater discharges from municipal sewer systems and land disturbing activities under the Virginia Stormwater Management Program. The construction permitting authority has been transferred to DCR with the anticipation that it will eventually be transferred to local governments, streamlining the permitting process for commercial and residential construction.

Wetlands Mitigation/Compensation

The Virginia Marine Resources Commission (VMRC) amended its Wetlands Mitigation/Compensation Policy in 2005 to achieve a no-net loss of wetlands in the tidal wetlands regulatory program. It was noted that between 1993 and 2004 the Commission had approved permits that created a loss of 132 acres of tidal wetlands, but only approved compensation for about 20 acres. The updated policy removes all minimum area exemptions and allows compensation requirements to be met through mitigation banks (*see Wetlands section for further detail*).

Water Quality Standards

In June, 2005 Virginia adopted statewide water quality standards for dissolved oxygen, chlorophyll-*a* and water clarity to meet nutrient reduction criteria for Bay and tidal tributaries. These standards are designed to protect migratory fish spawning and nursery, shallow water habitat for submerged aquatic vegetation, open water, deep water and deep channel water habitat for aquatic life. Additional water quality standards for chlorophyll-*a* and dissolved oxygen specific to the James, Mattaponi and Pamunkey Rivers are eligible for final action in November. As an aid in achieving these new water quality standards, nutrient load caps have been set accordingly in permitting for point source discharges.

Guidance

Better Land Use Planning in Coastal Virginia

Developed through Section 309 funding for improving Shoreland management, this 30-page document released in November 2004 outlines the land use pressures on Virginia's coastal resources and provides case studies, tools and recommendations to local governments to improve site planning and reduce CSIs. This report offers local governments specific recommendations for implementation through comprehensive plans and ordinances. CBLA is developing a companion website that is intended as a clearinghouse for land use efforts that protect Virginia's coastal resources.

Riparian Buffer Manual

On September 15, 2003 CBLAB approved the final draft of the *Riparian Buffer Modification & Mitigation Guidance Manual*. The manual includes guidance for local governments in the development of ordinances to better implement the buffer modification provisions of the Chesapeake Bay Preservation Area Designation and Management Regulations.

Local Watershed Management Planning in Virginia

In 2003, DCR released a guide for local governments on preparing watershed management plans entitled *Local Watershed Management Planning in Virginia, A Community Water Quality Approach*. The guide provides the process for developing a watershed plan and key components for a successful strategy.

Policy

Stream and Buffer Restoration

In 2005, two Executive Orders were issued for stream restoration and riparian buffers. Executive Order 90, Improving Stream Health and Water Quality by Restoring Streams throughout the Commonwealth, establishes the Stream Restoration Initiative that will promote and coordinate stream restoration activities at state and local levels. Executive Order 91, Preserving Water Quality by Establishing Riparian Buffers in Chesapeake Bay Watershed, revised the Riparian Buffer Implementation Plan to restore and conserve riparian buffers along stream and rivers.

Low Impact Development Assessment Task Force

In 2003, the Virginia General Assembly legislation created the Low Impact Development Assessment Task Force (LID-TF). In its preliminary report to the General Assembly in November 2003, the Task Force noted that while LID techniques hold promise for stormwater management and watershed planning, they are still relatively uncommon and underutilized in Virginia. The LID-TF intends to produce a model ordinance for local governments and a certification process and criteria for LID practices. A workgroup of the Task force produced a technical memorandum on how to incorporate LID practices into existing regulatory requirements for stormwater management and wetlands protection that is being considered by the Department of Conservation and Recreation.

Tributary Strategies

In January 2005, the office of the Secretary of Natural Resources released the final *Nutrient and Sediment Reduction Tributary Strategy for Virginia's Chesapeake Bay Basins.* These strategies represent a reduction of nutrients (nitrogen and phosphorus) and sediments to meet the goals for the Chesapeake Bay set by the EPA. The development of these strategies represents a crucial step in addressing water quality from nonpoint sources.

Stormwater Management

The Virginia Department of Transportation has consolidated its efforts to implement Erosion and Siltation Control, Stormwater Management, VSMP Construction Permitting and MS4 Programs. VDOT formed two teams, the Stormwater Program Technical Team, and the Stormwater

Program Policy Team. This change represents a significant step toward coordination of stormwater management activities at VDOT to reduce CSIs.

Shoreline Management

As a result of a grant from the Coastal Program, in May 2005, VIMS developed an *Interagency Shoreline Management Consensus Document* providing guidance for setting priorities for shoreline management in Virginia. The priorities, developed through collaboration with various state agencies, call for the least invasive approach. The four general categories of approach, from least to most impact, are 1) no action, 2) non-structural techniques, 3) combined non-structural and structural techniques, and 4) structural techniques. The priorities set in this document will be reflected in the permit review process. *(See sections on Wetlands and Coastal Hazards for more detail.)*

Training

Low Impact Development Workshops

In December 2003, the Virginia Department of Environmental Quality, the Virginia Department of Conservation and Recreation, the Division of Chesapeake Bay Local Assistance and the Corps of Engineers' Norfolk District held five workshops on Low Impact Development throughout Virginia. The workshops introduced LID principles to the public and gathered comments from participants on the role of LID in the review of development projects.

Low Impact Development Video

The Northern Virginia Regional Commission produced an educational video entitled *Reining in the Storm, One Building at a Time.* The video provides an overview of LID techniques such as green roofs, planted buffers, permeable pavers, and rain barrels, for commercial and residential properties. The video has great demand and has been screened in many coastal communities.

Funding

Land Conservation and Acquisition

The Virginia Land Conservation Foundation (VLCF) provides state funding to conserve open spaces and parks, natural areas, cultural and historic areas, and farmland and forests. The VLCF was first funded in 2000, and has awarded $13.2 million in grants that preserved15,671 acres. For FY 2005, $10 million is available in grants, divided equally among four categories: natural area protection; open spaces and parks; farmlands and forest preservation; and historic area preservation. Review of grant applications in provided by an Interagency Taskforce. Additional criteria requested by the General Assembly in 2005 are: local drinking water supply protection; status of the parcel under a locality's master plan as a Chesapeake Bay Preservation Area; the extent to which the parcel has water quality benefits and/or the affected locality has identified the parcel in its comprehensive plan as having important local water quality benefits; the general value of the parcel in satisfying the primary categories compared to alternatives; wildlife benefit; and the degree to which the parcel satisfies recreational needs as identified in the Virginia Outdoors Plan and/or a local comprehensive plan. *(For more information on the Virginia Outdoors Plan, see Public Access.*)

The Virginia Outdoors Fund (VOF), administered by the Virginia Department of Conservation

and Recreation (DCR), is a grant program for acquisition and development of public outdoor recreation areas and facilities. VOF funding is available to towns, cities, counties, regional park authorities and state agencies for 50 percent matching assistance.

Since the last Assessment, the Virginia Outdoors Foundation, the state's primary holder of conservation easements, has obtained 150,000 additional acres, over half of the total 290,367 acres held in easement. Of this total, only 27,613 acres are within the coastal zone. However, the Foundation holds easements within the larger Chesapeake Bay Watershed totaling 270,430 and owns 3,410 additional acres within the watershed.

Nonpoint Source Pollution

Funding mechanisms available to reduce nonpoint source pollution include: the DEQ Coastal Nonpoint Pollution Program, Section 319 funds, Water Quality Improvement Funds for agricultural best management practices (BMPs), DEQ Chesapeake Bay Program implementation grants, and DCR Chesapeake Bay Watershed Grants.

Land Use and Transportation

The General Assembly identified $4 million for ground transportation planning and research. With these funds, The Virginia Department of Transportation has awarded 15 grants to planning district commissions for initiatives including linking transportation and land use planning.

Local Programs

Since the last assessment, many local and regional initiatives have been developed to address issues such as watershed protection, buffer restoration, green infrastructure, wastewater and stormwater management, and low impact development. An example is a recent partnership between James City County, Builders for the Bay, and the Center for Watershed Protection to convene a roundtable to examine and redesign each of the County's ordinances to eliminate impediments to water quality protection.

Conclusion

1. Identify priority needs or major gaps in addressing the programmatic objectives for this enhancement area that could be addressed through a 309 Strategy (i.e., inadequate authority, data gaps, inadequate analytical methods, lack of public acceptance, etc.).

As land use decisions that result in CSIs are predominantly made at the local level, the major challenge faced by the state in addressing CSIs is coordination with local governments and private landowners. While many tools are available to address land use impacts on coastal resources, these localities may lack the resources, training, or political will to effectively use these tools. Local governments in Virginia vary in their levels of staff and resources with which to implement ordinances and address land use decisions. One agency providing assistance to coastal watershed localities in Virginia to address impacts from land development and agriculture that ultimately impact coastal resources is the Division of Chesapeake Bay Local Assistance (DCBLA). While DCBLA provides a high level of technical assistance to coastal zone communities, recent reductions in funding may reduce its ability to do so, causing pressure

on local governments to implement the Bay Act with reduced guidance and resources. It would be appropriate for the Coastal Program to provide leadership in addressing the problems associated with lack of knowledge and leadership by developing and delivering sustained professional workshops for local government staff, a primer for elected officials, and education of coastal property owners.

Local governments, in turn, face challenges as they develop innovative programs that go above and beyond requirements to mitigate CSIs. Often, due to Virginia's status as a Dillon Rule state with regard to local powers, municipalities are prohibited from enacting more stringent standards than the state explicitly requires. A state-level planning agency could address these difficulties by identifying the needs of localities, advocating for changes through the legislature, and coordinating resources that can be provided to localities to mitigate CSIs through low impact development, stream restoration, riparian buffers, and most importantly, growth management. This agency could also be charged with identifying and developing mechanisms for funding implementation projects by localities. The Coastal Program's role in this effort would be to convene a roundtable that would scope the need, role, and steps necessary to establish a state-level planning agency or office. Much like CBLAD was created as an outcome of the Chesapeake Bay Roundtable, a state planning agency is envisioned as the potential outcome of a stakeholder consensus-building roundtable.

A major gap in state and local government coordination to address CSIs relates to onsite sewage discharge. In addition to the growth management issues and impacts on non-tidal wetlands stemming from approval of alternative septic systems in the coastal zone, an issue of concern is the privatization of onsite septic assessment, which raises fears that privatized soil evaluators will be pressured to approve septic systems in order to continue receiving business from developers. Further, alternative onsite septic systems require regular maintenance and homeowners have not proven to be reliable and responsible operators of these systems. The Coastal Program could provide leadership in this area by convening a task force to identify and develop ways in which localities can ensure proper maintenance of these alternative septic systems; one possibility would be the adoption of enabling legislation that permits localities to require licensed inspection and operation of these systems. Another opportunity for Coastal Program leadership would be in gathering data from local health departments on the number of septic systems installed in nontidal wetlands, for which there is currently no permitting or tracking available; this would lead to an assessment of the issue to determine if new enforceable policies are needed for septic systems in the coastal zone.

An additional waste disposal concern is that of packaged wastewater treatment plant discharges. Through NPDES permitting, these discharges often require the prohibition of shellfish aquaculture in the surrounding waters, potentially limiting shellfish harvest. The Coastal Program should consider taking leadership in assessing these discharges to determine if new enforceable policies are needed.

Another challenge in addressing CSIs is the inherent difficulty in demonstrating causal relationships between land use and pollution, and the associated challenge of quantifying the success of programs to reduce impacts. An opportunity for the Coastal Program could be to identify existing research on the causal links between land use and pollution, and gaps in that research that could be productively pursued. The second phase of this effort would be to prioritize the identified research needs and determine which program should best oversee this

research. This research ultimately would be used to inform the need for new enforceable policies relating to land use and pollution.

Appropriate shoreline development has been defined loosely in several pieces of legislation. However, a functional, detailed definition of appropriate development to guide localities in their decision-making has yet to be developed. While this is clearly a difficult undertaking, it seems an appropriate project for the Coastal Program to initiate. Ideally, this definition would be developed through a consensus-building effort with support from all stakeholders for the ultimate definition. Recognizing that this may be an impossible goal, a modified effort would be to commission a study by an institution respected by the various stakeholders. The definition of appropriate development could then serve as the basis for a model ordinance for localities, building on the model ordinance of the LID Task Force mentioned above.

Transportation in Virginia's coastal zone represents a major gap in effective, proactive management of CSIs. The General Assembly funding for transportation research represents a step in this direction. To further examine the relationship between transportation and sprawling land use patterns, the Coastal Program may wish to consider conducting a survey of whether and how other states have linked transportation project approvals to consideration of impacts on coastal resources. This survey could examine policies adopted by other states to encourage alternative transportation modalities in the coastal zone, and the adaptability of these policies to Virginia.

It is also recommended that the Coastal Program and its partners continue to improve the data available on the changing land uses and coastal resources. Since the last Assessment, major improvements have been made using new technology to map and inventory coastal resources. Two suggestions for future inventories are that local governments be asked to report changes in the shoreline and that an inventory of buffers be conducted, including their soil characteristics and depth, to add to the resources available for coastal planning. Related to the need for a buffer inventory is the need for a study whether these buffers actually work in providing the nutrient removal services predicted.

2. What priority was this area previously and what priority is it now for developing a 309 strategy and designating 309 funding and why?

1997 Assessment		Last Assessment (2000)		This Assessment (2005)	
High	✓	**High**	✓	**High**	✓
Medium		Medium		Medium	
Low		Low		Low	

Among the enhancement areas, Cumulative and Secondary Impacts represent the greatest potential impact to coastal resources. The continued high priority ranking reflects this, as well as the appropriateness of Virginia Coastal Zone Management Program's taking a leadership role in addressing CSIs.

Cumulative & Secondary Impacts: Strategy

STRATEGY #1: *State/Local Water & Land Use Coordination*

Summary

The VA CZM Program has invested considerable funding to date in the development of the Coastal Geospatial and Educational Mapping System (GEMS) designed to present (on the web) maps of the best remaining blue and green infrastructure in Virginia's coastal zone and information on the value and management of those resources. A contract is in place with VCU to design the portal to Coastal GEMS which will appear as part of the VA CZM Web site. Many of the data layers have already been developed. The strategy over the next five years would be to continue development of Coastal GEMS. This would include creation of new data layers and creation of tools that use the data layers to provide various outputs. A second aspect of the strategy would be to secure agreements with federal, state and local agencies/governments to consult Coastal GEMS at key junctures in land use planning and permitting processes. This strategy would also work with affected parties to better define and promote "appropriate development" and to incorporate this concept into local comprehensive plans and ordinances that affect coastal growth and development. The goal will be to foster stronger linkages between local land use policy and state water use policy. Through this strategy it may also become necessary to fund certain VA CZM staff working on CSI or other strategies should Section 306 funds remain level over the next 5 years.

Enforceable Policies/Outcomes

- Memoranda of Agreement between VA CZM and willing coastal cities, towns and counties to incorporate Coastal GEMS information into planning and permitting procedures. Model comp plan language (including definition of "appropriate development") that could be adapted and/or adopted by local governments.
- MOAs between VA CZM and willing state and federal agencies to incorporate Coastal GEMS information into planning and permitting procedures.
- Updating of Coastal GEMS Webs site to show localities where MOAs are in place. A coastal zone-wide map would show localities in blue/green where agreements are signed.

Tasks	Time	Budget
Task 1: Additional data layer development (1-3 data layer subcontracts). Additional data layers identified will be produced. (FY 04 Task 93.06 results in a list of needed green data layers.)	Year 1	$100,000
Task 2: Create and conduct training workshops on the use of Coastal GEMS for coastal cities, counties, PDCs, state and federal agencies, non-profit environmental groups and housing developers, energy developers, etc. As many as 11 workshops would be held at various locations. Produce promotional materials to encourage use of Coastal GEMS.	Year 1	$20,000
Task 3: Convene an advisory group of data producers and users for developing Coastal GEMS and to draft a model MOA for local governments and a model MOA for state and federal agencies. Define appropriate development for use in comp plans and other legally binding documents.	Year 1	$10,000
Task 4: Additional data layer development (1-2 data layer subcontracts).	Year 2	$70,000

Task 5: Work with localities and agencies to get agreements signed and Coastal GEMS Web site updated.	Year 2	$10,000
Task 6: Using advisory group established in Task 3, determine and develop most important analytic tools or composite data layers to be produced. For example, a tool that uses data layers of the most important avian habitats and wind conditions to determine optimum locations for wind farms; a tool that uses data layers on location of SAV beds, flushing characteristics, etc to determine best locations for upland development.	Years 3-5	$208,000
Task 7: Funding of VA CZM office staff to manage this and other Section 309 strategies.	Year 5	$50,000
Total		$468,000

Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total Request**
$130,000	$80,000	$60,000	$85,000	$113,000	$468,000

STRATEGY #2: *Shoreline Management*

Summary

Waterfront development is rapidly altering Virginia's shoreline, often in ways that can be detrimental to habitats and water quality. In particular, many low energy shorelines are being hardened with revetments and bulkheads where less damaging techniques for managing shoreline erosion could be employed. This strategy will build on progress made during the last 309 Strategy to integrate riparian and near-shore management objectives and improve shoreline management practices. As a result of this strategy, the various agencies involved in shoreline management will be better able to promote living shoreline techniques and reduce the cumulative and secondary environmental impacts of waterfront development on shorelines. The strategy will include six components: a living shoreline summit, revisions to the current Wetlands Guidelines, research on living shorelines, a local shoreline planning guidance document, data on shoreline conditions, and outreach and training projects.

The living shoreline summit, which could be held in conjunction with Maryland, would bring together scientists, state and federal regulatory staff, local wetlands board members and staff, private contractors, educators and private environmental interests to review the current status of living shorelines and to develop a plan for advancing the use of this technique. Revising the Wetlands Guidelines, which are used by state agencies and local governments to guide shoreline management decisions, would provide an opportunity for: 1) including new guidance on living shorelines, and 2) consensus building among the many agencies and organizations involved in shoreline management. Shoreline research would focus on: 1) documenting the habitat value of living shoreline components vs. the habitats they would replace, 2) improving the design of living shoreline components, and 3) developing a protocol for determining the feasibility of living shorelines on a reach (shoreline segment) basis. In order to better inform local shoreline management decisions, additional shoreline situation reports and shoreline evolution studies would be developed. Recommendations for shoreline stabilization on a reach basis would be included to the extent practicable. A shoreline planning guidance

document would be developed to help localities to proactively address shoreline management issues and meet the comprehensive planning requirements of the Chesapeake Bay Preservation Act. Outreach activities would include a living shoreline brochure and website for landowners, as well as a design manual and training program for contractors.

Enforceable Policies/Outcomes

- A "Living Shoreline Summit," in December of 2006 with peer reviewed proceedings, to advance the use of this management technique.
- Revised "Wetlands Guidelines" to be used by VMRC, VIMS and local wetlands boards and others to guide decisions about shoreline and tidal wetlands management.
- Improved data on shoreline conditions to support more informed shoreline management decisions.
- Research to document the habitat value of living shorelines and to improve their design.
- A guidance document for local governments to use in shoreline management planning
- Outreach materials for land use decision-makers, landowners and contractors on living shoreline advantages and design principles.
- A training program for contractors and local government staff on living shoreline practices.

Tasks	Time	Budget
Task 1: Outreach and Training. Hold a "Living Shoreline Summit"($5k) to review current science, data and management programs and develop a plan for promoting living shorelines. Peer-reviewed proceedings to be published. Create a landowner brochure and website ($5k) that incorporate social marketing techniques.	Year 1	$10,000
Task 2: "Wetlands Guidelines" revised for adoption by the Virginia Marine Resources Commission to incorporate new guidance on living shorelines and other issues.	Year 1	$45,000
Task 3: Research – Potential topics include: Habitat value of living shorelines; Living shoreline design; Developing a cost-effective methodology for assessing potential for living shorelines on a reach basis. ($45k in year 1 and $50k in year 2.)	Years 1 - 2	$95,000
Task 4: Living shoreline design manual for contractors.	Year 3	$50,000
Task 5: Shoreline planning guidance document for local governments.	Year 3	$25,000
Task 6: Living shoreline training program for contractors with certificate of completion.	Year 4	$50,000
Task 7: Data Acquisition and Development – Development of new Shoreline Situation Reports (hopefully with an assessment of living shoreline potential based on methodology from task 3); Additional local Shoreline evolution reports. ($50k in year 2, $75k in year 3, $100k in year 4, and $153k in year 5.)	Years 2 – 5	$378,000

Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total Request**
$100,000	$100,000	$150,000	$150,000	$153,000	$653,000

STRATEGY #3: *Onsite Wastewater Management*

Summary

In 2000 the Virginia Department of Health Sewage Handling and Disposal Regulations were revised. These changes have influenced coastal development patterns as well as the types and costs of Onsite Wastewater Treatment Systems (OWTS) available to coastal residents. The new regulations allow the use of engineered systems, known as alternative onsite wastewater treatment systems (AOWTS), which can be used in places where the separation distance to the water table does not meet the minimum standards for conventional systems. The use of these systems has significantly opened up new areas for development. These systems also require a greater amount of maintenance. Coastal localities are not necessarily prepared to deal with the consequences of the proliferation of these systems (by overseeing maintenance or addressing land use implications). Some regions in the coastal zone have already started to look into these issues and provide suggestions to their localities for better management of these systems.

In addition, neither traditional nor alternative OWTS are necessarily designed to reduce nutrients. Nutrient-reducing technology does exist and has been tested in Virginia. By one estimate, a household on a traditional septic system could allow as much as 9 pounds of nitrogen per person per year to enter our waters, whereas advances in wastewater treatment facilities can reduce a person's impact to as little as 2 pounds of nitrogen per person per year.

This strategy is designed to follow 2 tracts: (1) investigate and make recommendations to improve the management and maintenance of alternative OWTS in coastal localities and (2) analyze current policies and regulations that apply to OWTS to identify opportunities to incorporate nutrient reducing technology. In developing visualization tools under this strategy, we can use the proliferation of AOWTS and analysis of soil limitations to focus local attention on the fact that "septic suitability" can no longer be used as a growth management tool in coastal communities. In each case, Virginia CZM would coordinate with the Virginia Department of Health and the Virginia Onsite Wastewater Recyclers Association.

Enforceable Policies/Outcomes

- Digital, GIS compatible, data on septic systems locations (by system type, date installed etc.)
- Guidance on management options for localities for adoption of a management program for alternative OWTS
- Analysis and clarification of state and local responsibility (and flexibility) with respect to overall OWTS management
- Recommendations for policy changes (state and/or local) to promote nutrient-reducing OWTS

Tasks	Time	Budget
Task 1a: Develop digital, GIS compatible, data on septic systems locations (traditional and engineered) and soil limitations in the coastal zone (by system type, date installed etc.) Estimate loading.	Year 1-3	$150,000
Task 1b: Building off work already started in Northern Virginia and the Middle Peninsula, develop management/maintenance recommendations for localities regarding OWTS	Year 2	$30,000
Task 1c: Conduct outreach to coastal localities on the proliferation of OWTS highlighting how the use of alternative systems has changed land use patterns and discuss management options	Year 4	$40,000

Task 2a: Analyze current regulations and policies (including shellfish TMDLs) that apply to OWTS for gaps and overlaps in goals relating to nutrient management (Health Dept regulations, Bay Act, Water Quality Standards/Nutrient Trading, Tributary Strategies and local government authority). Identify areas for improving efficiency.	Year 2	$30,000
Task 2b: Prepare policy recommendations to improve the nutrient management of OWTSs based on Task 2a.	Year 3	$20,000

Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Total Request**
$50,000	$110,000	$70,000	$40,000		$270,000